Tamilnadu Board Class 11 Monthly Test Question Paper
Chemistry - 2018

STANDARD -XI
CHEMISTRY
SECTION - I

Time : 1. 30 Hrs. **Marks : 50**

10 X 1 = 10

Choose the correct answer:

1. Which one of the following binary liquid mixtures exhibits positive deviation from Raoults law?
   a) acetone + chloroform b) water + nitric acid
   c) HCl + water d) ethanol + water
2. **Statement I :** When a non volatile solute is dissolved in a pure solvent, the vapour pressure of the pure solvent will decrease.
   Statement II : The vapour pressure of the solution will depend only on the solvent molecules.
   a) Statement I is correct and statement II is wrong. b) Statements I and II are correct.
   c) Statement I is wrong and statement II is correct. d) Statements I and II are wrong.
3. What is the molality of a 10% w/w aqueous sodium hydroxide solution?
   a) 2.778 b) 2.5 c) 10 d) 0.4
4. Consider the following statements
   I) Mixture of propane and butane are known as LPG.
   II) The compound in which two halogen atoms are attached to adjacent carbon – atoms are called as vicinal dihalides.
   III) Alkenes react with acidified $KMnO_4$ solution and are oxidised to ketones.
   IV) Calcium carbide reacts with water to give acetylene.
   Which of the above statement *I* is *I* are correct?
   a) *I and IV* b) II and III c) I and III d) all are correct
5. The general formula for cycloalkanes
   a) C_nH_n b) C_nH_{2n} c) C_nH_{2n-2} d) C_nH_{2n+2}
6. Which of the following is optically active?
   a) 2 – methyl pentane b) citric acid c) glycerol d) none of these
7. Match the List I and List II correctly by using the code given below

List I	List II
A. Ethanol + thionyl chloride	1. Finkelstein reaction
B. Bromo alkane + concentrated NaI	2. Swartz reaction
C. Bromo ethane + AgF	3. Hunsdiccker reaction
D. Silver propionate + bromine in CCl_4	4. Darzen's halogenation

	A	B	C	D
a)	4	1	3	2
b)	1	4	3	2
c)	4	1	2	3
d)	3	2	1	4

8. The order of reactivity of alcohols with halo acid is
   a) tertiary > secondary > primary. b) primary > secondary > tertiary
   c) secondary > tertiary > primary d) tertiary > primary > secondary
9. The most easily hydrolysed molecule under S_N^1 condition is
   a) allyl chloride b) ethyl chloride c) iso propyl chloride d) benzyl chloride

10. Acetone $\xrightarrow[(ii)\ H_2O/H^+]{(i)\ CH_3MgI}$ X. X is

a) 2 – propanol b) 2 – methyl – 2 – propanol c) 1 – propanol d) acetonol

SECTION - II

Answer any five questions. Question NO 18 is compulsory: **5 X 2 = 10**

11. How will you prepare standard solution?
12. Define Normality.
13. What is Kolbe's electrolytic method.
14. What is aromatisation?
15. What is the reaction of ethylene with Baeyer's reagent?
16. How is Grignard reagent prepared?
17. Convert $C_6H_5N_2Cl \longrightarrow C_6H_5F$
18. Why is it necessary to avoid even traces of moisture during the use of Grignard reagent?

SECTION - III

Answer any five questions. Question NO. 25 is compulsory: **5 X 3 = 15**

19. Why chlorination of methane is not possible in dark?
20. How does bromoethane react with the following?

(I) KNO_2 (II) $AgNO_2$

21. Discuss the aromatic nucleophilic substitution reaction of chlorobenzene.
22. *Complete the following.*

(I) 2 – butyne $\xrightarrow{\text{Lindlar catalyst}}$ (II) $CH_2 = CH_2 \xrightarrow{I_2}$

23. Write notes on Birch reduction.
24. Convert:

(I) Sodium benzoate $\longrightarrow$ Benzene (II) Benzene + $CH_3Cl \longrightarrow$ Toluene

25. Calculate the molarity of a solution containing 7.5g of glycine ($NH_2 - CH_2 - COOH$) dissolved in 500g of water.
26. What are Hypotonic and Hypertonic solutions?

SECTION – IV

Answer any three questions: **3 X 5= 15**

27. a) Explain positive deviation of solution with an example. **3**

b) Give examples for an ideal solutions. **2**

28. a) How will you prepare acetaldehyde from acetylene? **2**

b) How will you prepare maleic anhydride from benzene? **3**

29. a) What happens when acetyl chloride is treated with CH_3MgI? **2**

b) What are Freons? Write their uses. **3**

30. Two isomers 'A' and 'B' have the same molecular formula $C_2H_4Cl_2$. Compound 'A' reacts with aqueous KOH gives compound 'C' of molecular formula C_2H_4O. Compound 'B' reacts with aqueous KOH gives compound 'D' of molecular formula $C_2H_6O_2$. Identify A, B, C and D. **5**

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Choose the correct answer:

1. How many moles of magnesium phosphate $Mg_3(PO_4)_2$ will contain 0.25 moles of oxygen atoms a) 0.02 b) 3.125×10^{-2} c) 1.25×10^{-2} d) $2\ 5 \times 10^{-2}$
2. Match the List I and List II correctly by using the code given below

List II	List II
A) $Cr_2O_7^{2-}$	1. +5
B) MnO_4^-	2. +6
C) VO_3^-	3. +3
D) FeF_6^{3-}	4. +7

	A	B	C	D
a)	3	1	4	2
b)	4	3	2	1
c)	2	4	1	3
d)	3	2	1	4

3. Which among the following is Lewis acid? S^{2-}, OH^-, BF_3^-, H^+, F^-
   a) BF_3 b) H^+ c) S^{2-} d) a and b
4. How many moles of glucose are present in 720 g of glucose.
   a) 3 moles b) 4 moles c) 5 moles d) 2 moles
5. **Assertion :** Number of radial and angular nodes for 3p orbital are 1,1 respectively.
   Reason : Number of radial and angular nodes depends upon principal and azimuthal quantum numbers.
   a) Both assertion and reason are correct. b) Assertion is correct but reason is false.
   c) Assertion is false but reason is correct. d) Both assertion and reason are false.
6. Electron density in the yz plane of 3d orbital is x^2-y^2 a) zero b) 0.50 c) 0.75 d) 0.90
7. For p–electron the orbital angular momentum is a) $\frac{\sqrt{2}\,h}{2\pi}$ b) $\frac{\sqrt{2h}}{2\pi}$ c) $\frac{\sqrt{2x4h}}{2\pi}$ d) $\frac{\sqrt{6h}}{2\pi}$
8. What is the maximum numbers of electrons that can be associated with the following set of quantum numbers? n=3, ℓ=1 and m=–1 a) 4 b) 6 c) 2 d) 10
9. *The first transition series is from ——— to ———*
   a) Sc to Zn b) *Hf to Hg* c) *Y to Cd* d) Ac to Lr
10. The element with atomic number 57 belongs to
    a) s – block b) p – block c) d – block d) f – block
11. Consider the following otatements
    I) Helium has the highest first ionisation enthalpy.
    II) Chlorine has less electron affinity than fluorine.
    III) Ne has more ionisation energy than Boron.
    IV) The ionisation energy of noble gases is zero.
    Which of the above statement /s is / are correct? a) I, II and III b) I and III c) I, III and IV d) all
12. The correct order of size among Br; Br^+, Br^- is
    a) $Br < Br^+ < Br^-$ b) $Br^+ < Br < Br^-$ c) $Br < Br^- < Br^+$ d) $Br^- < Br^+ < Br$
13. Ortho and para hydrogen differ in
    a) Proton spin b) electron spin c) nuclear charge d) both 'b' and 'c'
14. Hydrogen burns in air with a ——— flame. a) light bluish b) yellow c) green d) none of these
15. H_2O_2 act as
    a) oxidising agent b) reducing agent c) bleaching agent d) all of these
16. At room temperature ordinary hydrogen contains
    a) 25% para 75% ortho b) 1% para 99% ortho c) 75% para 25% ortho d) 99% para 1% ortho
17. Which of the following is alkaline earth metal?
    a) Sodium b) Calcium c) Lithium d) Potassium
18. Match the list I and list II correctly by using the code given below

List I	List II
A) Gypsum	1. $MgCO_3\ CaCO_3$
B) Carnalite	2. $Be_3Al_2Si_6O_{18}$
C) Beryl	3. $KCl.\ MgCl_2.\ 6H_2O$
D) Dolomite	4. $CaSO_4.\ 2H_2O$

	A	B	C	D
a)	1	2	3	4
b)	4	3	2	1
c)	2	3	4	1
d)	4	2	1	3

19. **Assertion :** Generally alkali and alkaline earth metals form super oxides.
    Reaaon : There is a single bond between O and O in superoxides.
    a) both assertion and reason are true and reason is the correct explanation of assertion
    b) both assertion and reason are true but reason is not the correct explanation of assertion
    c) assertion is true but reason is false d) both assertion and reason are false

20. The suspension of slaked lime in water is known as
a) lime water b) quick lime c) milk of lime d) aqueous solution of slaked lime

21. Maximum deviation from ideal gas is expected from
a) $CH_{4(g)}$ b) $NH_{3(g)}$ c) $H_{2(g)}$ d) $N_{2(g)}$

22. The relation between inversion temperature and Vander waals constant
a) $Ti = \frac{Rb}{2a}$ b) $Ti = \frac{2a}{Rb}$ c) $Ti = \frac{8a}{27R^2b}$ d) $Ti = \frac{8a}{27Rb}$

23. The value of the gas constant R is
a) 0.082 dm^3 atm b) 0.987 cal. mol^{-1} k^{-1} c) 8.3 J mol^{-1} k^{-1} d) 8 erg mol^{-1} K^{-1}

24. In an adiabatic expansion of an ideal gas a) $W = -\Delta u$ b) $W = \Delta u + \Delta H$ c) $\Delta u = O$ d) $W = O$

25. The temperature of the system decrease in an
a) Isothermal expansion b) Isothermal compression
c) adiabatic expansion d) adiabatic compression

26. Which of the following is not a thermodynamic function?
a) internal energy b) enthalpy c) entropy d) frictional energy

27. **Assertion** : $BeSO_4$ and $MgSO_4$ are readily soluble in water.
Reason : Hydration enthalpies of Be^{2+} and Mg^{2+} are greater than lattice enthalpy factor
a) Both assertion and reason are correct.
b) Both assertion and reason are correct and reason is not the correct explanation of assertion.
c) Both assertion and reason are correct and reason is the correct explanation of assertion.
d) Assertion is correct; reason is wrong.

28. The equilibrium constant for the equilibrium $H_2 + I_2 \rightleftharpoons 2HI$ is 4. Then the equilibrium constant for the equilibrium $HI \rightleftharpoons \frac{1}{2} H_2 + \frac{1}{2} I_2$ at the same temperature is a) 2 b) 0.25 c) 0.5 d) 4

29. 10g hydrogen gas is present in an one litre flask. Then its molar concentration is $mol.lit^{-1}$. a) 5 b) 10 c) 2.5 d) 0.2

30. For a reaction $A_{(g)} + B_{(g)} \rightleftharpoons C_{(g)} + D_{(g)}$ $K_C = 1$ which of the following statement is true?
a) [A] + [B] = [C] + [D] b) [A] = [B] and [C] = [D]
c) [A] [B] = [C] [D] d) [A] [B] [C] [D] = 1

31. The Van't Hoff factor (i) for a dilute aqueous solution of the strong electrolyte barium hydroxide is a) 0 b) 1 c) 2 d) 3

32. Which of the following binary liquid mixtures exhibits positive deviation from Raoult's law?
a) $CH_3COCH_3 + CHCl_3$ b) $H_2O + HNO_3$ c) $HCl + H_2O$ d) $C_2H_5OH + H_2O$

33. Osmotic pressure of a solution is given by the relation
a) $\pi = nRT$ b) $\pi V = nRT$ c) $\pi RT = n$ d) none of these

34. Which of the following molecule contain no π bond? a) SO_2 b) NO_2 c) CO_2 d) H_2

35. Which of the following is diamagnetic? a) O_2 b) O_2^{2-} c) O_2^{+} d) none of these

36. Shape of ClF_3 is a) Planar triangular b) Pyramidal c) 'T' shaped d) none of these

37. Hyper conjugation is also known as
a) no bond resonance b) Baker – nathan effect c) both a and b d) none of these

38. What is the hybridisation state of benzyl carbonium ion? a) sp^2 b) spd^2 c) sp^3 d) sp^2d

39. The number of stereoisomers of 1,2 – dihydroxy cyclopentane a) 1 b) 2 c) 3 d) 4

40. Which one of the following shows functional isomerism?
a) ethylene b) propane c) ethanol d) CH_2Cl_2

41. Ortho and para–nitro phenol can be separated by
a) azeotropic distillation b) destructive distillation
c) steam distillation d) cannot be separated

42. In an organic compound, phosphorous is estimated as
a) $Mg_2P_2O_7$ b) $Mg_3(PO_4)_2$ c) H_3PO_4 d) P_2O_5

43. Which of the following compounds will not undergo Friedel – crafts reaction easily
a) Nitro benzene b) Toluene c) Cumene d) Xylene

44. Peroxide effect can be studied in case of
a) oct–4–ene b) hex–3–ene c) pent–1–ene d) but–2–ene

45. Some meta–directing substituents in aromatic substitution are given. Which one is most deactivating? a) –COOH b) $-NO_2$ c) $-C\equiv N$ d) $-SO_3H$

46. Arrange the following compounds in increasing order of their density
A) CCl_4 B) $CHCl_3$ C) CH_2Cl_2 D) CH_3Cl
a) D < C < B < A b) C > B > A > D c) A < B < C < D d) C > A > B > D

47. Consider the following reaction
$CH_3CH_2CH_2Br + NaCN \rightarrow CH_3CH_2CH_2CN + NaBr$. This reaction will be the fastest in
a) ethanol b) methanol c) DMF d) Water

48. Release of oxides of nitrogen and hydrocarbons into the atmosphere by motor vehicles is prevented by using
a) grift chamber b) scrubbers c) trickling filters d) catalytic convertors

49. The P^H of normal rain water is a) 6 5 b) 7.5 c) 5.6 d) 4.6

50. Ozone depletion will cause
a) forest fires b) eutrophication c) bio magnification d) global warming

ONE MARK SPECIAL TEST, 2018 - 19

STANDARD - XI

CHEMISTRY

Time : 1.00 Hr. **Marks : 50**

Choose the correct answer:

1. For alkali metals which one of the following trends is incorrect?
   a) Hydration energy: Li > Na > K > Rb
   b) Ionisation energy: Li > Na > K > Rb
   c) Density: Li < K < Na < Rb
   d) Atomic size: Li < Na < K < Rb
2. Which of the following compounds will not evolve H_2 gas on reaction with alkali metals?
   a) ethanoic acid b) ethanol c) Phenol d) None of these
3. Match the flame colours of the alkali and alkaline earth metal salts in the bunsen burner.

p) Sodium	1) Brick red
q) Calcium	2) Yellow
r) Barium	3) Violet
s) Strontium	4) Apple green
t) Cesium	5) Crimson red
u) Potassium	6) Blue

   a) p – 2 q – 1 r – 4 s – 5 t – 6 u – 3
   b) p – 1 q – 2 r – 4 s – 5 t – 6 u – 3
   c) p – 4 q – 1 r – 2 s – 3 t – 5 u – 6
   d) p – 6 q – 5 r – 4 s – 3 t – 1 u – 2
4. **Assertion:** Generally alkali and alkaline earth metals form superoxides.
   Reason : There is a single bond between O and O in superoxides.
   a) both Assertion and reason are true and reason is the correct explanation of assertion.
   b) both Assertion and reason are true and reason is not the correct explanation of assertion
   c) assertion is true but reason is false.
   d) both assertion and reason are false.
5. **Assertion (A) :** $BeSO_4$ is soluble in water while $BaSO_4$ is not.
   Reason (R) : Hydration energy decreases down the group from Be to Ba and lattice energy remains almost constant.
   a) both assertion and reason are true and reason is the correct explanation of assertion.
   b) both assertion and reason are true and reason is not the correct explanation of assertion.
   c) assertion is true but reason is false.
   d) both assertion and reason is false.
6. In context with beryllium, which one of the following statements is incorrect?
   a) It is rendered passive by nitric acid.
   b) It forms Be_2C.
   c) Its salts are rarely hydrolysed.
   d) Its hydride is electron deficient and polymeric.
7. Which of the following statement is false.
   a) Ca^{2+} ions are not important in maintaining the regular beating of the heart.
   b) Mg^{2+} ions are important in the green parts of the plants.
   c) Mg^{2+} ions form a complex with ATP.
   d) Ca^{2+} ions are important in blood clotting.
8. Rate of diffusion of a gas is
   a) directly proportional to its density.
   b) directly proportional to its molecular weight.
   c) directly proportional to its square root of its molecular weight.
   d) inversely proportional to the square root of its molecular weight.
9. When an ideal gas undergoes understrained expansion, no cooling occurs because the molecules.
   a) are above inversion temperature.
   b) exert no attractive forces on each other.
   c) do work equal to the loss in kinetic energy.
   d) collide without loss of energy.
10. Consider the following statements.
    i) Atmospheric pressure is less at the top of a mountain than at sea level.
    ii) Gases are much more compressible than solids or liquids.
    iii) When the atmospheric pressure increases the height of the mercury column rises
    Select the correct statement.
    a) I and II
    b) II and III
    c) I and III
    d) I, II and III

11. Maximum deviation from ideal gas is expected from
a) CH_4 (g) b) NH_3 (g) c) H_2 (g) d) N_2 (g)

12. What is the density of N_2 gas at 227°C and 5.00 atm pressure? ($R = 0.082$ L atm K^{-1} mol^{-1})
a) 1.40 g/L b) 2.81 g / L c) 3.41 g/L d) 0.29 g/L

13. 25 g of each of the following gases are taken at 27°C and 600 mm Hg pressure. Which of these will have the least volume?
a) HBr b) HCl c) HF d) HI

14. The amount of heat exchanged with the surrounding at constant temperature and pressure is given by the quantity
a) ΔE b) ΔH c) ΔS d) ΔG

15. The intensive property among the quantities below is
a) mass b) volume c) enthalpy d) $\frac{\text{mass}}{\text{volume}}$

16. Heat of combustion is always
a) positive b) negative c) zero d) either positive or negative

17. Which of the following is not a thermodynamic function?
a) internal energy b) enthalpy c) entropy d) frictional energy

18. If one mole of ammonia and one mole of hydrogen chloride are mixed in a closed container to form ammonium chloride gas then
a) $\Delta H > \Delta U$ b) $\Delta H - \Delta U = 0$ c) $\Delta H + \Delta U = 0$ d) $\Delta H < \Delta U$

19. The bond dissociation energy of methane and ethane are 360 kJ mol^{-1} and 620 kJmol^{-1} respectively. Then, the bond dissociation energy of C – C bond is
a) 170 kJ mol^{-1} b) 50 kJ mol^{-1} c) 80 kJ mol^{-1} d) 220 kJ mol^{-1}

20. ΔS is expected to be maximum for the reaction
a) $Ca(s) + \frac{1}{2} O_2(g) \rightarrow CaO(s)$ b) $C(s) + O_2(g) \rightarrow CO_2(g)$
c) $N_2(g) + O_2(g) \rightarrow 2NO(g)$ d) $CaCO_3(s) \rightarrow CaO(s) + CO_2(g)$

21. The radioactive element of group 1 is
a) rubidium b) cesium c) francium d) radium

22. Match the List I with List II and select the correct answer using the code given below.

List I	List II
A) High enthalpy of hydration	1) Cs
B) Most electropositive element	2) Li
C) Golden yellow flame	3) Fr
D) Radioactive	4) Na

	A	B	C	D
a)	1	3	2	4
b)	4	3	1	2
c)	2	1	4	3
d)	3	1	4	2

23. The solubility of Group II hydroxides ——— down the group.
a) increase b) decrease c) remains constant d) none of these

24. Which of the following is covalent in nature?
a) BaO b) MgO c) BeO d) CaO

25. Nitrates of alkaline earth metals on heating give
a) oxides b) peroxides c) nitrites d) nitric Oxide

26. ——— is as a drying agent.
a) CaO b) BaO c) MgO d) BeO

27. ——— is referred to as 'desert rose'.
a) Epsom b) Gypsum c) Plaster of paris d) Calcium sulphate

28. **Assertion:** Second ionisation energy of alkaline earth metals are much smaller than those of alkali metals.
Reason: In alkaline earth metals the second electron is to be removed from a monovalent cation.
a) Both assertion and reason are true and reason is the correct explanation of assertion.
b) Both assertion and reason are true but reason is not the correct explanation of assertion.
c) Assertion is true but reason are false.
d) Both assertion and reason are false.

29. Match the List I with List II and select the correct answer using, the code given below the lists.

List I	List II
A) Gypsum	1) Bleaching powder
B) Plaster of paris	2) Chlorophyll
C) Slaked lime	3) Statues
D) Magnesium	4) Natural insulator

	A	B	C	D
a)	4	3	1	2
b)	4	3	2	1
c)	2	1	4	3
d)	2	1	3	4

30. Dead burnt plaster is

a) $CaSO_4$ b) $CaSO_4 . \frac{1}{2} H_2O$ c) $CaSO_4.H_2O$ d) $CaSO_4\ 2H_2C$

31. Match the List I with List II and select the correct answer using the code given below.

List I	List II
A) Pressure	1) Inert gas
B) Xe	2) Charles law
C) PV = constant	3) Pascal
D) Hot air balloon	4) Boyle's law

	A	B	C	D
a)	1	3	2	4
b)	4	3	1	2
c)	3	1	4	2
d)	2	1	4	3

32. Passenger aeroplane cabins is artificially pressurished since
a) Pressure decreases with the increase in altitude
b) Pressure increases with the increase in altitude
c) temperature increases with the increase in altitude
d) None of these

33. The rate of diffusion of gas is ———— to square root of their molecular mass.
a) directly proportional b) inversely proportional
c) equal d) twice

34. Compressibility factor for real gas is given by

a) $\frac{PV}{nRT}$ b) $\frac{P}{nRT}$ c) $\frac{PV}{R}$ d) $\frac{PV}{T}$

35. For all gases, at very low pressure and very high temperature the compressibility factor value is
a) unity b) zero c) greater than one d) less than one

36. Density of the gas is ———— to pressure.
a) inversely proportional b) directly proportional
c) square root d) equal

37. "At constant volume the pressure of a fixed mass of a gas is directly proportional to temperature" is said by
a) Joseph Gay Jussac b) Graham c) Avogadro d) Dalton

38. Partial pressure is given as

a) $\frac{\text{mole fraction}}{\text{total pressure}}$ b) mole fraction x total pressure

c) $\frac{\text{mole fraction x total pressure}}{2}$ d) $\frac{2 \times \text{mole fraction}}{\text{total pressure}}$

39. At high temperature the average kinetic energy of the molecule is
a) low b) high c) neglected d) none of these

40. The condition for real gas to behave ideally is
a) low pressure and low temperature b) high pressure and low temperature
c) low pressure and high temperature d) high pressure and high temperature

41. **Match the List I with List II and select the answer using the code given below the List.**

List I	List II
A) Pressure	1) Intensive property
B) Number of moles	2) Path function
C) Density	3) Extensive property
D) Work	4) State function

	A	B	C	D
a)	1	2	3	4
b)	4	3	2	1
c)	4	3	1	2
d)	3	4	1	2

42. All naturally occurring processes are ——— process.
a) reversible b) irreversible c) cyclic process d) isochoric

43. Which among the following is not a state function.
a) Pressure b) Volume c) Temperature d) Work

44. A gas contained in a cylinder fitted with a piston constitutes a ——— system.
a) open b) isolated c) closed d) heterogeneous

45. **Match the List I with List II and select the correct answer using the code given below.**

List I	List II
A) Isochoric	1) $dE = 0$, $dV = 0$; $dH = 0$, $dP = 0$
B) Cyclic	2) $dT = 0$
C) adiabatic	3) $dV = 0$
D) isothermal	4) $q = 0$

	A	B	C	D
a)	1	3	4	2
b)	1	2	3	4
c)	3	1	2	4
d)	3	1	4	2

46. The heat of combustion of methane is
a) $-394.55\ KJmol^{-1}$ b) $-87.78\ KJ\ mol^{-1}$ c) $-1366.5\ KJ\ mol^{-1}$ d) $-78.78\ KJ\ mol^{-1}$

47. The SI unit of molar heat capacity is
a) $JK^{-1}\ mol^{-1}$ b) JK mol c) $KJ\ mol^{-1}$ d) $JK^{-1}\ mol$

48. Alkali metals dissolve in Liquid ammonia to give ——— solution.
a) red b) blue c) deep blue d) green

49. Born – Haber cycle is used in calculating
a) enthalpy change b) internal energy c) lattice energy d) none of these

50. Gibb's free energy is defined as
a) $G = H + TS$ b) $G = TS - H$ c) $G = H - TS$ d) $G = TS + H$

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ONE MARK SPECIAL TEST, 2018 - 19
STANDARD - XI
CHEMISTRY

Time : 1.00 Hr. **Marks : 50**

Choose the correct answer:

1. In the equilibrium A + B $\rightleftharpoons$ C + D + heat. Which of the following favours reverse reaction?
   a) increase of pressure b) decrease of pressure
   c) increase of temperature d) decrease of temperature
2. The equilibrium constant for the equilibrium $H_2+I_2 \rightleftharpoons 2HI$ is 'a' then the equilibrium constant for the equilibrium $\frac{1}{2} H_2 + \frac{1}{2} I_2 \rightleftharpoons HI$ is a) a b) $\frac{a}{2}$ c) a^2 d) $\sqrt{a}$
3. The Q value and K_c value of the equilibrium $xA + yB \rightleftharpoons mC + nD$ are 10^{-2} and 10^2 respectively then which of the following is true for the above equilibrium.
   a) reverse reaction is favoured b) forward reaction is favoured
   c) insufficient data to predict the favourable direction
   d) reaction has not favoured any direction
4. For the reaction $A_{(g)} + B_{(g)} \rightleftharpoons C_{(g)} + D_{(g)}$ $K_C = 1$ / which of the following statement is true?
   a) [A] + [B] = [C] + [D] b) [A] = [B] and [C] = [D]
   c) [A] [B] = [C] [D] d) [A] [B] [C] [D] = 1
5. In the equilibrium $N_2+3H_2 \rightleftharpoons 2NH_3$ ΔH = –ve, which one affects K_P value?
   a) pressure b) temperature c) catalyst d) increase in concentration of N_2
6. The equilibrium constant for the reactions $2A+B \rightleftharpoons 4c$ and $2c = A + \frac{1}{2} B$ are K_1 and K_2. Then
   a) $K_1 = 2K_2$ b) $K_1 = \frac{1}{K_2}$ c) $K_1 = \frac{1}{\sqrt{K_2}}$ d) $K_1 = \frac{1}{K_2^2}$
7. Match the List I and List II correctly by using the code given below.

List I	List II
A) $CaCO_{3(s)} \rightleftharpoons CaO_{(s)} + CO_{2(g)}$	1. $Q = K_C$
B) $H_2+I_2 \rightleftharpoons 2HI$	2. $K_P = PCO_{2(g)}$
C) Equilibrium constant	3. $\frac{[product]}{[reactant]}$
d) Equilibrium	4. pressure has no effect.

	A	B	C	D.
a)	2	4	1	3
b)	2	3	4	1
c)	2	1	3	4
d)	2	4	3	1.

8. In an equilibrium reaction two subtances are involved. If the concentration of each substance is doubled, then the equilibrium constant:
   a) doubled b) does not change c) reduced to half d) reduced to one fourth
9. Consider the following statements.
   I) the condition for equilibrium is $K_f = K_r$
   II) equilibrium can be attained from either side of the reaction
   III) presence of catalyst affects both the forward reaction and reverse reaction to the same extent.
   IV) Equilibrium constant varied with temperature
   Which of the above statement / s is / are incorrect? a) I and IV b) I c) III d) III and I
10. $\frac{K_c}{K_p}$ for the reaction $N_{2(g)} + 3H_{2(g)} \rightleftharpoons 2NH_{3(g)}$ is a) $\frac{1}{RT}$ b) $\sqrt{RT}$ c) RT d) $(RT)^2$
11. Solubility of carbon dioxide gas in cold water can be increased by
    a) increase in pressure b) decrease in pressure
    c) increase in volume d) none of these
12. In a chemical equilibrium, the rate constant for the forward reaction is 2.5×10^2 and the equilibrium constant is 50. The rate constant for the reverse reaction is
    a) 11.5 b) 5 c) 2×10^2 d) 2×10^{-3}
13. In which of the following equilibrium K_P and K_C are not equal?
    a) $2NO_{(g)} \rightleftharpoons N_{2(g)} + O_{2(g)}$ b) $SO_2 + NO_2 \rightleftharpoons SO_{3(g)} + NO_{(g)}$
    c) $H_{2(g)} + I_{2(g)} \rightleftharpoons 2HI_{(g)}$ d) $PCl_{5(g)} \rightleftharpoons PCl_{3(g)} + Cl_{2(g)}$
14. For the reaction $AB_{(g)} \rightleftharpoons A_{(g)} + B_{(g)}$ at equilibrium. AB is 20% dissociated at a total pressure of P, the equilibrium constant K_P is related to the total pressure by the expression.
    a) $P = 24K_p$ b) $P = 8K_p$ c) $24P = K_p$ d) none of these
15. For the formation of two moles of $SO_{3(g)}$ from SO_2 and O_2, the equilibrium constant is K_1. The equilllbrium constant for the dissociation of one mole of SO_3 into SO_2 and O_2 is
    a) $\frac{1}{K_1}$ b) K_1^2 c) $\left(\frac{1}{K_1}\right)^{\frac{1}{2}}$ d) $\frac{K_1}{2}$
16. Equimolar concentration of H_2 and I_2 are heated to equllibrium in a 1 litre flask. What percentage of initial concentration of H_2 has reacted at equilibrium if rate constant for both forward and reverse reaction are equal? a) 33% b) 66% c) $(33)^2$ % d) 16.5%
17. Which has the highest freezing point? a) 1M glucose b) 1M NaCl c) 1M $CaCl_2$ d) 1M AlF_3
18. Which of the following 0.10 m aqueous solution win have the lowest freezing point?
    a) $Al_2(SO_4)_3$ b) $C_5H_{10}O_5$ c) KI d) $C_{12}H_{22}O_{11}$

19. Which one has the highest osmotic pressure?
a) $\frac{M}{10}$ HCl b) $\frac{M}{10}$ Urea c) $\frac{M}{10}$ $BaCl_2$ d) $\frac{M}{10}$ Glucose

20. The unit of freezing point depression constant is
a) K mol^{-1} b) K. kg^{-1} mol^{-1} c) K. kg mol^{-1} d) K. kg^{-1}

21. For which of the following Van't Hoff factor cannot be greater than unity?
a) K_4 [Fe $(CN)_6$] b) $AlCl_3$ c) NH_2CONH_2 d) KNO_3

22. Which of the following concentration terms is / are independent of temperature?
a) molality b) molarity c) mole fraction d) 'a' and 'c'

23. Which of the following is incorrect for ideal solution?
a) $\Delta H_{mix} = 0$ b) $\Delta U_{mix} = 0$
c) $\Delta P = P_{(observed)} - P_{(calculated\ by\ Raoult's\ law)} = 0$ d) $\Delta G_{mix} = 0$

24. Osmotic pressure of a solution is given by the relation.
a) $\pi = nRT$ b) $\pi V = nRT$ c) $\pi RT = O$ d) none of these

25. Which of the following aqueous solutions has the highest boiling point?
a) 0.1M KNO_3 b) 0.1M Na_3PO_4 c) 0.1M $BaCl_2$ d) 0.1M K_2SO_4

26. Phenol dimerises in benzene having Van't Hoff factor 0.54. What is the degree of association?
a) 0.46 b) 92 c) 46 d) 0.92

27. **Assertion** : An ideal solution obeys Raoult's law.
Reason : In an ideal solution solvent – solvent as well as solute – solute interactions are similar to solute – solvent interactions.
a) Both assertion and reason are true and reason is the correct explanation of assertion.
b) Both assertion and reason are true but reason is not the correct explanation of assertion.
c) Assertion is true but reason are false. d) Both assertion and reason are false.

28. Which of the following is not paramagnetic? a) S^{2-} b) NO c) O_2^- d) N_2^-

29. Shape of XeF_2 molecule is a) angular b) linear c) triangle d) none of these

30. The bond length of H_2^+, H_2^- and H_2 are in the order
a) $H_2^+ > H_2^- > H_2^-$ b) $H_2 > H_2^+ > H_2^-$ c) $H_2^- > H_2^+ > H_2$ d) none of these

31. Which of the following is electron deficient? a) PH_3 b) $(CH_3)_2$ c) BH_3 d) NH_3

32. **Assertion** : Oxygen molecule is paramagnetic.
Reason : It has two unpaired electron in its bonding molecular orbital.
a) both assertion and reason are true and reason is the correct explanation of assertion.
b) both assertion and reason are true and reason is not the correct explanation of assertion.
c) assertion is true but reason is false. d) both assertion and reason are false.

33. Shape of ClF_3 is a) planar triangular b) pyramidal c) 'T' shaped d) none of these

34. Non–Zero dipole moment is shown by a) CO_2 b) p–dichloro benzene c) CCl_4 d) H_2O

35. Among the following the compound that contains ionic, covalent and co–ordinate linkage is
a) NH_4Cl b) NH_3 c) NaCl d) none of these

36. of the following molecules, which have shape similar to carbondioxide?
a) $SnCl_2$ b) NO_2 c) C_2H_2 d) All of these

37. IUPAC name of $CH_2(COOH)_2$ is
a) Malonic acid b) 2–carboxyethanoic acid c) propane 1, 3 – dioxic acid d) Methanedioic acid

38. An isomer of ethanol is a) methanol b) diethyl ether c) acetone d) dimethyl ether

39. In an organic compound, phosphorus is estimated as
a) $Mg_2P_2O_7$ b) $Mg_3(PO_4)_2$ c) H_3PO_4 d) P_2O_5

40. Which one of the following shows functional isomerism?
a) ethylene b) propane c) ethanol d) CH_2Cl_2

41. The general formula for alkadiene is a) C_nH_{2n} b) C_nH_{2n-1} c) C_nH_{2n-2} d) C_nH_{n-2}

42. Which of the following is optically active?
a) 3–chloro pentane b) 2–chloro propane c) meso–tartaric acid d) Glucose

43. Match the List I and List II correctly by using the code given below.

List – I	List – II
A) $Fe_4[Fe(CN)_6]_3$	1. black precipitate
B) $Fe(CNS)_3$	2. Blood red colour
C) AgI	3. green precipitate
D) Ag_2S	4. yellow precipitate

	A	B	C	D
a)	3	2	1	4
b)	3	2	4	1
c)	3	1	2	4
d)	4	3	2	1

44. 0.26g of an organic compound gave 0.039g of water and 0.245g of carbondioxide on combustion. Calculate the percentage of C. a) 1.66% b) 25.69% c) 52.69% d) 75.69%

45. Which one of the following has high boiling point?
a) C_6H_6 b) CCl_4 c) $C_2H_5OC_2H_5$ d) CH_2OH / CH_2OH

46. In the hydrocarbon $^6CH_3-^5CH=^4CH-^3CH_2-^2C\equiv^1CH$ the state of hybridisation of carbon in 1,3 and 5 are. a) sp, sp^3, sp^2 b) sp^3, sp, sp^2 c) sp^3, sp^2, sp d) sp, sp^2, sp^3

47. The shape of IF_7 molecule is
a) pentagonal bi–pyramidal b) square pyramidal c) square planar d) octahedral

48. The number of bond pairs in XeO_2F_2 is a) 3 b) 5 c) 4 d) 6

49. The bond order of CO molecule is a) 1 b) 2 c) 3 d) 4

50. The normality of 1.25M sulphuric acid is a) 1.25N b) 3.75N c) 2.5N d) 2.25N

ONE MARK SPECIAL TEST, 2018 - 19

STANDARD - XI

CHEMISTRY

(Units – 11 to 15)

Time : 1.00 Hr. Marks : 50

Answer all the questions:

Choose the correct answer: 50 X 1 = 50

1. **Assertion** : The trans isomer is more stable than cis isomer.
   Reason : In the cis isomer, the bulky groups are on the same side of the double bond.
   a) Both assertion and reason are correct
   b) Both assertion and reason are correct and reason is not the correct explanation of assertion.
   c) Assertion is correct reason is wrong.
   d) Both assertion and reason are correct and reason is the correct explanation of assertion
2. Molecular formula of Ferric ferro cyanide.
   a) $Fe_4 [Fe (CN)_6]$ b) $Na_4 [Fe (CN)_5]$ c) $Fe_4 [Fe (CN)_6]$ d) $Fe_3 [Fe (CN)_6]$
3. Appearance of curdy white precipitate soluble in ammonia solution indicates the presence of
   a) bromine b) sulphur c) chlorine d) iodine
4. The IUPAC name of
   CH – COOH
   ||
   CH – COOH
   a) 2 – butene – 1, 4 dioic acid b) 2 – butene 1, 4 dioic acid
   c) ethene 1, 2 dioic acid d) Butanoic acid
5. In the hydrocarbon $CH_2 = C = CH_2$ the state of hybridisation of carbon 1, 2 and 3 are
   a) sp, sp^2, sp b) sp^2, sp, sp^2 c) sp^3, sp, sp^3 d) none of these
6. The IUPAC name of $CH_3 – CH = CH – C \equiv CH$ is
   a) pent – 4 – yn – 2 – ene b) pent – 3 – en – 1 – yne
   c) pent – 2 – en – 4 – yne d) pent – 1 – yn – 3 – ene
7. The isomer of ethanol is
   a) acetaldehyde b) dimethyl ether c) acetone d) methyl carbinol
8. Sodium nitropruside reacts with sulphide ion to give a purple colour due to the formation of
   a) $[Fe (CN)_5 NO]^{3-}$ b) $[Fe (NO)_5 CN]^{+}$ c) $[Fe (CN)_5 NO]^{3-}$ d) $[Fe (CN)_5 NOS]^{3-}$
9. The relative stability of carbOcations.
   a) $^+C (CH_3)_3 > ^+CH (CH_3)_2 > ^+CH_2 CH_3 > ^+CH_3$
   b) $^+C (CH_3)_3 > ^+CH_2 CH_3 > ^+CH (CH_3)_2 > ^+CH_3$
   c) $C^+ (CH_3)_3 > ^+CH_2 CH_3 > ^+CH_3 > ^+CH (CH_3)_2$
   d) $C^+ (CH_3)_3 < ^+CH (CH_3)_2 < ^+CH_2 CH_3 < ^+CH_3$
10. Consider the following statements.
    i) Higher the electronegativity of the substituent, greater is the – I effect.
    ii) The strength of order of chloro acetic acid is $CCl_3COOH > CHCl_2COOH > CH_3COOH$
    iii) When the π electron is transfered towards the attacking reagent it is called +E effect
    iv) The phenoxide ion is more stabilised than phenol by resonance effect
    which of the above statement / s is are correct?
    a) i, ii and iii b) ii, iii and iv c) ii, iv d) all of these
11. What is the hybridisation state of benzyl carbon.
    a) sp^2 b) spd^2 c) sp^3 d) sp^2d
12. Which of the following species is not electrophilic in nature?
    a) Cl^- b) BH_3 c) H_3O^+ d) $^+NO_2$

13. – I effect is shown by
a) – Cl b) – Br c) both 'a' and 'b' d) $-CH_3$

14. The geometrical shape of carbocation is
a) linear b) tetrahedral c) planar d) pyramidal

15. Heterolytic fission of C–Br bond results in the formation of
a) free radical b) carbanion c) carbocation d) carbanion and carbocation

16. **Match the list I and II correctly by using the code given below.**

List – I	List – II
A) PET	1. Soft drinks bottles
B) CDPE	2. Shampoo bottles
C) PP	3. Sandwich bags
D) PVC	4. Straws

	A	B	C	D
a)	2	4	1	3
b)	3	1	4	2
c)	1	3	4	2
d)	4	2	1	3

17. Propene reacts with cold conc H_2SO_4 gives
a) 2 propanol b) propane c) propyne d) ethane

18. On ozonolysis propene gives
a) HCHO b) CH_3CHO c) HCHO + CH_3CHO d) CH_3COOH

19. Carbon skeleton formula for $CH_3 - C \equiv C - CH_3$ is
a) – ≡ b) – ≡ – c) ≡ – d) none of these

20. Consider the following statements .
i) An alkyne shows acidic nature only if it contains terminal hydrogen.
ii) Alkynes undergo hydration on warming with mercuric sulphate and dil H_2SO_4.
iii) All the six hydrogen atoms i benzene are equivalent.
iv) A compound may be aromatic, if it contains $(4n - 2)\ \pi$ electrons.
Which of the above statements / is / are correct?
a) i and iv b) ii and iv c) i, ii and iii d) all of these

21. Which of the following is optically active?
a) 2 – methyl pentane b) citric acid c) glycerol d) none of these

22. The general formula for cyclo alkanes
a) C_nH_n b) C_nH_2n c) C_nH_{2n-2} d) C_nH_{2n+2}

23. The compound that will react most readily with gaseous bromine has the formula
a) C_3H_6 b) C_2H_2 c) C_4H_{10} d) C_2H_4

24. Which of the following can be used as the halide component for Friedal crafts reaction?
a) Chloro benzene b) Bromo benzene c) Chloro ethene d) isopropyl chloride

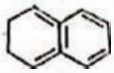
25. 2 – butyne on chlorination gives
a) 1 – chloro butane b) 1,2 – dichloro butane
c) 1, 1, 2, 2 – tetra chloro butane d) 2, 2, 3, 3 – tetra chlora butane

26. Identify the compound 'Z' in the following reaction.

$$C_2H_6O \xrightarrow[623K]{Al_2O_3} X \xrightarrow{O_3} Y \xrightarrow{Zn/H_2O} (Z)$$

a) HCHO b) CH_3CHO c) HCOOH d) CH_3COOH

27. Which of the following is aliphatic saturated hydrocarbon?
a) C_8H_{18} b) C_8H_{16} c) C_8H_{14} d) all of these

28. Which of the following is non aromatic?
a)  b)  c)  d) 

29. $CH_2-CH_2 \xrightarrow{(A)} CH \equiv CH$, where A is
(Br, Br)
a) Zn b) conc. H_2SO_4 c) alcoholic KOH d) dil H_2SO_4

30. Match the list I and list II correctly by using the code given below.

List I	List II
A) CHI_3	1. Fire extinguisher
B) CCl_4	2. Insecticide
C) CFC	3. Antiseptic
D) DDT	4. Refrigerants

	A	B	C	D
a)	2	4	1	3
b)	3	2	4	1
c)	1	2	3	4
d)	3	1	4	2

31. ———— reaction is used to test primary amines
a) Swarts reaction b) Haloform reaction c) Gattermann reaction d) carbylamine

32. The formula for Freon – 113
a) $C_2F_3Cl_3$ b) $C_2F_2Cl_4$ c) CF_2Cl_2 d) CFI_3

33. **Assertion** : In mono haloarenes, electrophilic substitution occurs at ortho and para positions
Reason : Halogen atom is a ring deactivator
a) both assertion and reason are correct and reason is the correct explanation of assertion.
b) both assertion and reason are correct and reason is not the correct explanation of assertion.
c) assertion is true but reason is false.
d) both assertion and reason are false.

34. The treatment of ethyl formate with excess of RMgX gives
a) $R-\underset{\underset{O}{\|}}{C}-R$ b) $R-\underset{\underset{OH}{|}}{CH}-R$ c) R – CHO d) R – O – R

35. C – X bond is strongest in
a) CH_3Cl b) CH_3I c) CH_3Br d) CH_3F

36. Of the following compounds, which has the highest boiling point?
a) n – Butyl chloride b) Iso butyl chloride c) t – butyl chloride d) n – propyl chloride

37. DDT is prepared from
a) chlorobenzene + chloral b) chloro benzene + acetaldehyde
c) chloro benzene + Trichloro acetaldehyde d) 'a' and 'c'

38. The densities of haloarenes are in the order
a) $C_6H_5I > C_6H_5Br > C_6H_5Cl$ b) $C_6H_5Cl > C_6H_5Br > C_6H_5I$
c) $C_6H_5I > C_6H_5Cl > C_6H_5Br$ d) $C_6H_5I < C_6H_5Cl > C_6H_5Br$

39. Silver proplonate when refluxed with Bromine in CCl_4 gives
a) propionic acid b) chloro ethane c) bromo ethane d) chloro propane

40 The GWP based sequence of green house gases is
a) $CO_2 > CH_4 > N_2O > CFC$ b) $CFC > N_2O > CH_4 > CO_2$
c) $CFC > N_2O > CO_2 > CH_4$ d) $CFC > CO_2 > N_2O > CH_4$

41. The p^H of normal rain water is
a) 6.5 b) 4.5 c) 5.6 d) 4.6

42. Match the list I and II correctly by using the code given below

List I	List II
A) Stone leprosy	1. CO
B) Biological magnification	2. Green house gases
C) Global warming	3. Acid rain
D) Combination with haemoglobin	4. DDT

	A	B	C	D
a)	1	2	3	4
b)	2	3	4	1
c)	3	4	2	1
d)	4	2	1	3

43. Biochemical oxygen Demand value less than 5 ppm indicates a water sample to be
a) highly polluted b) poor in dissolved oxygen c) rich in dissolved oxygen d) low COD

44. Ozone depletion will cause
a) forest fires b) eutrophication c) bio magnification d) global warming

45: Bhopal Gas Tragedy is a case of
a) thermal polution b) air pollution c) nuclear pollution d) land pollution

46. Which one of the following is natural and human disturbance in ecology?
a) Forest fire b) Floods c) Acid rain d) Green house effect

47. Blue planet is known as
a) Lithosphere b) Biosphere c) Hydrosphere d) Troposphere

48. Earth's atmosphere contains ———— nitrogen.
a) 78% b) 87% c) 28% d) 82%

49. The gaseous envelope around the earth is known as atmosphere. The region lying between an altitudes of 11 – 50 km is
a) Troposphere b) Mesosphere c) Thermosphere d) Stratosphere

50. Photo chemical smog formed in congested metropolitan cities mainly consists of
a) Ozone, SO_2 and hydrocarbon b) Ozone, PAN and NO_2
c) PAN, smoke and SO_2 d) Hydrocarbons, SO_2 and CO_2

—— – Ω – ——